Reduce Fluorinated Gas Emissions from the Semiconductor Industry

In developing a regulation to implement the existing Massachusetts Clean Energy and Climate Plan for 2020 (CECP) strategy of Reducing SF_6 Emissions from Gas-Insulated Switchgear (GIS), MassDEP reviewed data reported to the Massachusetts Greenhouse Gas (GHG) Registry (the emissions registry that facilities use to comply with MassDEP's GHG reporting regulation, 310 CMR 7.71), in order to learn more about sulfur hexafluoride (SF_6) emissions in Massachusetts. These data showed that semiconductor manufacturers in Massachusetts emitted SF_6 amounts of a similar order of magnitude as the SF_6 emissions addressed through the CECP strategy for GIS. SF_6 is of particular concern as a GHG because of its potency and long atmospheric lifetime. A commonly used metric to express the impact of a GHG on the Earth's climate is its global warming potential (GWP). By this measure, SF_6 is 23,900 times more potent than carbon dioxide, the most common GHG, which is assigned a GWP of 1. In addition, semiconductor manufacturers reported emissions of additional fluorinated gases that also have high GWPs. Thus, MassDEP determined it was appropriate to consider addressing fluorinated gas emissions from semiconductor manufacturers when developing supplemental strategies to reduce GHG emissions.

MassDEP does not currently have sufficient information to estimate the degree to which emissions could be reduced. Aspects that would have to be considered to estimate reductions include:

- emissions controls already in place at semiconductor manufacturers
- the level of emissions that could be achieved when utilizing emissions controls

Parallel with the approach taken to other CECP strategies, MassDEP is developing a survey to solicit needed information from semiconductor manufacturers on their current operations and emissions control equipment, and is reaching out to industry associations for feedback.